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EVALUATION OF THE DATA TRANSFER PROCESS BETWEEN THE SHAPM AND SLD

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THESIS

EVALUATION OF THE DATA TRANSFER PROCESS BETWEEN THE SHAPM AND SLD

by

"L" Vernon Edwards

and

Walter Huston Faddis

Thesis Advisor: M. B. Kline

September 1973

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Evaluation of the Data Transfer Process
Between the SHAPM and SLD

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Submitted in partial fulfillment of
the requirements for the degree of

MASTER OF SCIENCE IN MANAGEMENT

from the
NAVAL POSTGRADUATE SCHOOL
September 1973

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ABSTRACT

The hypothesis upon which this research is based is that a current data transfer process exists but receives inadequate priority. Also, the data requirements are not all inclusive. Even though the Ships Logistic Division (SLD) Director has overall operational logistic support responsibility, Planning and Engineering for Repairs and Alterations Office (PERA), as an extension of the SLD, is the primary Naval Ship System Command (NAVSHIPS) user of the data and documentation which is provided relative to life cycle maintenance. This thesis examines specifically the interface of the maintenance management responsibility transfer process and the concurrent data documentation transfer between the Ship's Acquisition Project Manager (SHAPM) and the SLD/PERA combination. To accomplish this end, the authors first introduce the reader to PERA operations, discuss the present transfer process, enumerate the results and conclusions derived from a questionnaire sent to SHAPM and SLD/PERA organizations, and present recommendations to improve the transfer process.

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GLOSSARY OF ACRONYMS

APL	Allowance Parts Listing
AT	Acceptance Trials
CASREPT	Casualty Report
COSAL	Coordinated Onboard Ship's Allowance List
CSMP	Current Ship's Maintenance Project
DART	Detection Action Review Technique
ECP	Engineering Change Proposal
EFC	Electronics Field Change
FCT	Final Contract Trials
FOA	Fitting Out Availability
GFE	Government Furnished Equipment
ILS	Integrated Logistic Support
INSURV	Naval Board of Inspection and Survey
LSA	Logistic Support Analysis
MDCS	Maintenance Data Collection Sub-System
MMM(3M)	Maintenance and Material Management System
NAVORD	Naval Ordnance Systems Command
NAVSHIPS	Naval Ships Systems Command
OPNAV	Naval Operations
OTIDC	Outstanding Trial Item Disposition Conference
PERA	Planning and Engineering for Repairs and Alterations
PMS	Planned Maintenance Sub-System
PSA	Post Shakedown Availability

RFS	Ready for Sea
SCN	Ship's Construction Navy
SHAPM	Ship's Acquisition Project Manager
SLD	Ship's Logistic Division
SQT	Ship's Qualification Trials
SUPSHIPS	Superintendent of Shipbuilding, Conversion, and Repair
SYSCOM	Systems Commanders
UNREP	Underway Replenishment

I. INTRODUCTION

Viewing the early life cycle phases of a ship, one observes two key managers in the Naval Ship Systems Command (NAVSHIPS) who are deeply involved with providing a ship to the user which is operationally ready to fulfill its mission. The first is the Ship's Acquisition Project Manager (SHAPM) who is responsible for delivery of highly complex ships to the fleet within schedule and dollar constraints. The second is the Director of Ship Logistic Division (SLD) who is responsible for the life cycle logistic management of ships after their introduction into the fleet. As the complexity of the construction of new ships has increased, the Navy has found it commensurately more difficult to manage the complex overhauls of these units once they have joined the fleet. Resulting from this increased life cycle maintenance task, SLD Directors have delegated a portion of their authority in this area to Planning and Engineering for Repair and Alterations (PERA) offices.

Six PERA offices, as extensions of the SLDs, are tasked to carry out the life cycle maintenance management of particular classes of ships which are under their purview (submarines, aircraft carriers, etc.). The primary concern of the PERAs is in the area of repair and overhaul/modernization [1].

This thesis is based on the fact that every system has a life cycle comparable to that shown in Figure 1 [2]. In addition, each phase in the progression has supporting data and documentation which is required throughout the remaining life cycle. Recognizing that an Integrated Logistic Support (ILS) Plan is developed for each ship and has several subarea plans, this thesis is concerned only with the data requirements area and those specific items which should be identified and provided to the SLD/PERA relative to life cycle maintenance.

The hypothesis upon which this research is based is that a current data transfer process exists but receives inadequate priority. Also, the data requirements are not all inclusive. Even though the SLD Director has overall operational logistic support responsibility, PERA, as an extension of the SLD, is the primary NAVSHIPS user of the data and documentation which is provided relative to life cycle maintenance. This thesis examines specifically the interface of the maintenance management responsibility transfer process and the concurrent data documentation transfer between the SHAPM and the SLD/PERA combination. To accomplish this end, the authors first introduced the reader to PERA operations, discuss the present transfer process, enumerate the results and conclusions derived from a questionnaire sent to SHAPM and SLD/PERA organizations, and present recommendations to improve the transfer process.

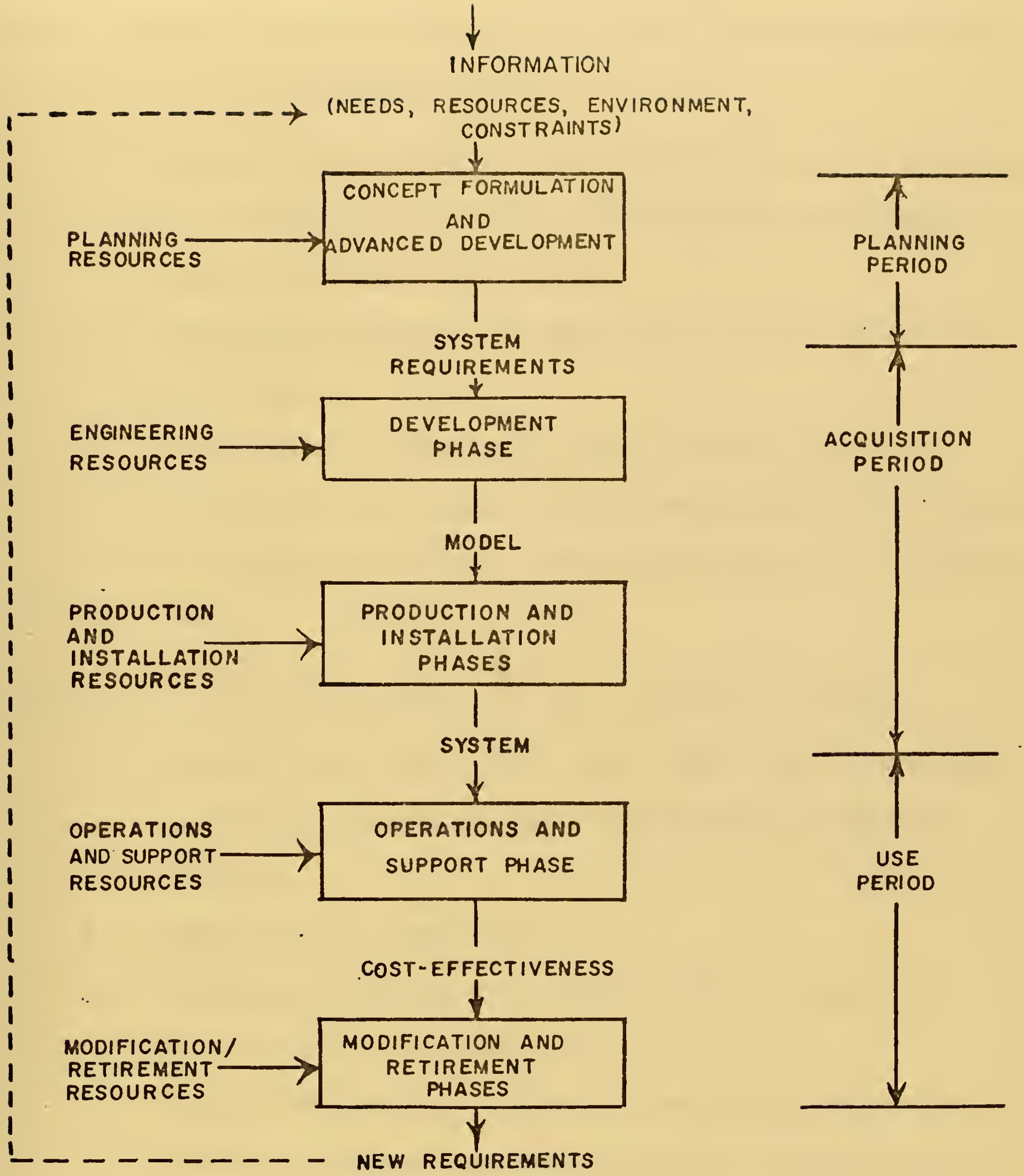

INFORMATION
(NEEDS, RESOURCES, ENVIRONMENT, CONSTRAINTS)
CONCEPT FORMULATION AND ADVANCED DEVELOPMENT
PLANNING RESOURCES
SYSTEM REQUIREMENTS
DEVELOPMENT PHASE
ENGINEERING RESOURCES
MODEL
PRODUCTION AND INSTALLATION PHASES
PRODUCTION AND INSTALLATION RESOURCES
SYSTEM
OPERATIONS AND SUPPORT PHASE
OPERATIONS AND SUPPORT RESOURCES
COST-EFFECTIVENESS
MODIFICATION AND RETIREMENT PHASES
MODIFICATION/ RETIREMENT RESOURCES
NEW REQUIREMENTS
PLANNING PERIOD
ACQUISITION PERIOD
USE PERIOD

Figure 1 SYSTEM LIFE CYCLE

The initial aspects of this thesis were derived as a result of direct liaison with PERA for Combatant Support Ships (CSS). A PERA office was utilized rather than an SLD office for the following reasons:

1. Schedule and academic constraints precluded individual interviews with each SLD Director and SHAPM relative to the thesis area.
2. Similarity between the PERA and SLD objectives in this area.
3. Convenience of the PERA office location and the fortunate circumstance of the responsible SLD Director being on site for interview concurrent with one visit.

The thesis effort was based on the following sources:

1. Personal interviews with PERA (CSS) personnel and the Director of Combatant Support Ship Logistic Division.
2. Questionnaire (Appendix A).
3. Telephone conversations with offices listed on questionnaire distribution.
4. Transfer Plans and Readiness Reviews from SHAPMs.
5. Classroom discussions and informal interface with professors.
6. Guest speakers at curriculum seminar sessions.
7. Reference list material.

There is evidence, based on phone conversation, that increased visibility is presently being afforded this transfer process area and that changes are taking place as this thesis is being researched. Therefore, some of the recommendations that follow may already be in the implementation stage as a result of the attention being given to this period of the acquisition cycle. This is due to its long range impact on life cycle maintenance.

II. INTRODUCTION TO PERA

In order to better understand the problems involved in transferring maintenance management responsibility from the SHAPM to the SLD/PERA, one must first understand the operations of both activities. The authors did not choose to address the SHAPM's operations because his activities were considered well defined and known in sufficient detail for the purposes of this thesis. It was necessary to elaborate on PERA Operations, however, since PERA is a relatively new organization whose activities might be less familiar to the reader.

As pointed out in Section I, PERA is established as an extension of the SLD in NAVSHIPS. Figure 2 is an organization chart depicting the position of PERA (CSS) in the chain of command. This will enable the reader to have a better perspective of a PERA's reporting structure.

> "The objective of the PERA program is to improve the advance planning, integration, and control procedures associated with PERA, required for the complex overhaul of ships. A further objective of the Program is to use scarce management and engineering resources on high priority programs more efficiently by the development and use of standard documentation methods, and procedures throughout the Naval Ship Systems Command and its field activities."[1]

---

[1] 5430.79B, Overhaul Planning and Engineering for Repairs and Alterations (PERA) Program; Objectives of and Responsibilities for, 28 May 1970, p. 1.

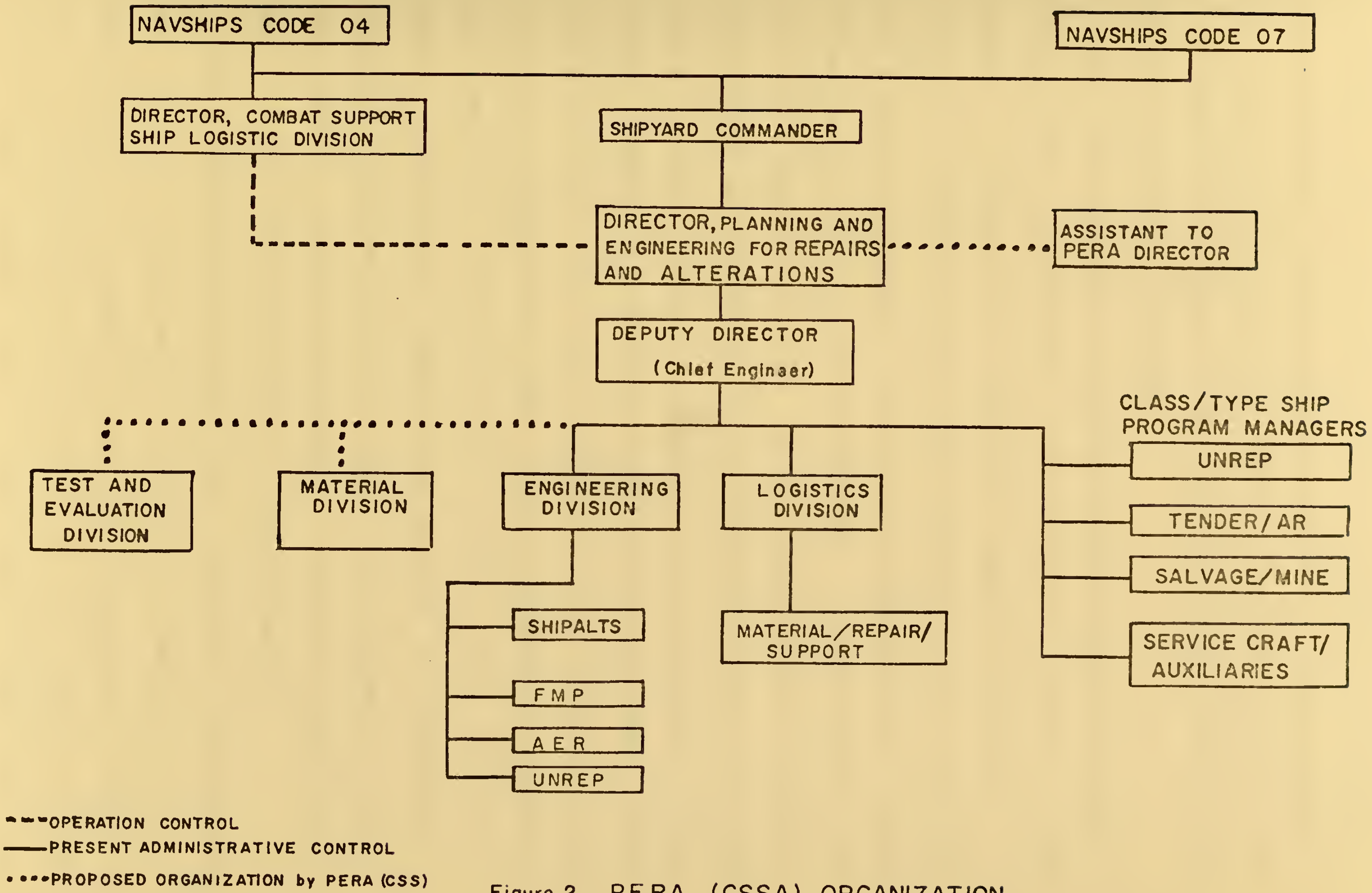

NAVSHIPS CODE 04
NAVSHIPS CODE 07
DIRECTOR, COMBAT SUPPORT SHIP LOGISTIC DIVISION
SHIPYARD COMMANDER
DIRECTOR, PLANNING AND ENGINEERING FOR REPAIRS AND ALTERATIONS
ASSISTANT TO PERA DIRECTOR
DEPUTY DIRECTOR (Chief Engineer)
CLASS/TYPE SHIP PROGRAM MANAGERS
TEST AND EVALUATION DIVISION
MATERIAL DIVISION
ENGINEERING DIVISION
LOGISTICS DIVISION
UNREP
TENDER/AR
SALVAGE/MINE
SERVICE CRAFT/ AUXILIARIES
SHIPALTS
MATERIAL/REPAIR/ SUPPORT
FMP
AER
UNREP
OPERATION CONTROL
PRESENT ADMINISTRATIVE CONTROL
PROPOSED ORGANIZATION by PERA (CSS)

Figure 2 PERA (CSSA) ORGANIZATION

To achieve these objectives, PERA is tasked to integrate the requirements of the various commands. PERA manages the planning and engineering efforts, modernizations, and/or overhauls of assigned ship types and vital interrelated programs pertaining thereto.

The PERAs develop a complete overhaul planning work package which is submitted to the overhaul activity. The package is provided in a specified format so that the translation process of the work information into the overhaul shipyard management information system will be minimal. The package consists of two sections, a modernization section and a repair section. In the modernization section, alterations authorized to be accomplished during the forthcoming overhaul period by NAVSHIPS, Naval Ordnance System Command (NAVORD), or the applicable Type Commander (TYCOM), are identified. The repair section of the package includes all repairs derived from PERA, Systems Commands (SYSCOMS), Type Commander, and ship's force inputs. Thus, the integrated alteration and repair work package is a detailed listing of required work to install new equipment or systems and/or to restore equipment to reliable operating condition, either through repair or modernization.

The planning work package will ultimately include master schedules showing major milestones, drawings, cost engineering, job summaries, test and inspection requirements, identification and planning of long lead-time standard and non-standard material procurement, technical repair

standards, and related documentation based upon requirements from the Fleet, Naval Operations (OPNAV), NAVSHIPS and other System Commands. In developing this planning package, PERA activities draw upon the mutual support and resources of other NAVSHIPS field activities by task assignment, where appropriate, or from commercial activities by contract [1].

III. PERA OPERATIONS

A. BACKGROUND

In reading this section, it should be kept in mind that PERA works in detail at the operational level and interfaces primarily with ship's force, TYCOM, SYSCOMS, and the overhaul activity in developing the integrated repair and alteration/modernization work package. Organizational relationships are identified, including authority and responsibility of each element in the Navy's hierarchy as it relates to PERA. An in-depth study then follows which depicts the role of PERA in developing each section of the integrated work package. Types of data which PERA must utilize during the process of developing the work package are provided to illustrate PERA's need for specific detailed information which can be provided through the transfer process.

B. CURRENT ORGANIZATION, AUTHORITY, AND RESPONSIBILITY [3]

The following description delineates the areas of authority and responsibility for the individual activities which are concerned with management control, engineering guidance, material acquisition control, and financial control as they relate to PERA.

1. The Deputy Commander for Fleet Maintenance and Logistic Support, SHIPS 04, has overall management and

technical responsibility for fleet maintenance and logistic support of Naval ships and craft. He is responsible for program control of the PERAs and for overall implementation of the PERA program in consonance with their roles as extensions of their SLDs. In this capacity, the Deputy Commander:

a. Assigns tasks to PERA.

b. Provides technical direction to them.

c. Prepares financial management plans for PERAs.

d. Administers PERA funds.

e. Establishes priority of PERA work and resolves differences.

f. Evaluates the effectiveness of the performance of PERA.

g. Develops standard documentation methods and procedures among SLDs in the administration of ship overhaul programs.

2. The Deputy Commander for Field Activities/Program Director for Shipyard Modernization and Management, SHIPS 07, is responsible for management of field activities and for all matters of organization and policy relating to industrial management. PERAs, as elements of Naval Shipyards, also fall under SHIPS 07 jurisdiction for management control.

3. The Deputy Commander for Plans, Programs and Financial Management/Controller, SHIPS 01, authorizes PERAs'

civilian ceilings as a separate account within the shipyards' total authorized ceiling assigned to SHIPS 07.

4. The Commander Naval Ship Engineering Center (NAVSEC), is responsible for establishing all engineering criteria, standards, and related policy pertaining to PERAs. NAVSEC also carries out or assists in the programming, procurement, and restoration and repair of hull, mechanical, electrical and electronic material required for support of the PERA Program [4].

5. In an effort to provide more responsiveness to fleet requirements, Type Commanders have authority to task PERA directly within the parameters delineated in Appendix B. TYCOMS, where practicable, develop anticipated tasks with projected workloads and submit them as far in advance as possible. PERA keeps SHIPS 04 and the responsible Shipyard Commander informed of all accepted tasks. Overall coordinating control and the assignment of priorities, where required, is exercised by SHIPS 04.

6. Commanders of Naval Shipyards are responsible for the administrative aspects of a specific PERA. This organizational relationship enables the Shipyard Commander to differentiate between the responsibilities of PERA to its customers and those of the shipyard to its own customers.

7. The authorities and responsibilities of PERA are outlined in detail in Appendix B.

C. WORK PACKAGE DEVELOPMENT

The major task currently performed by PERA Organizations is the formulation and management of an integrated alteration and repair package for implementation during a ship's restricted availability or overhaul/modernization. Both alteration and repair planning during actual operation are concurrent tasks, but in the following discussion they are intentionally separated in order to concentrate on significant portions as they proceed through their development cycle. Appendix C and Table I are provided as detailed

Months Prior to Overhaul	Milestone
18	Data collection (S)
17	Determination of deferred repair items (R)
16	SHIPALT status verification (S)
11	Shipcheck (S and R)
10	SHIPALT package finalization (S)
6	Repair package assembled (R) and NAVSHIPS issues 180 day letter (S)
4	Final preparation (R)
2	Repair package approval (R)
0	Overhaul start date

(S) - SHIPALT Planning

(R) - Repair Planning

Table I. Work Package Timetable

milestones and time sequence listings to assist the reader in following the planning progression for alterations and repairs.

1. Planning Ship Alterations

This task involves four primary areas as follows:

a. Data Collection (18 months prior to overhaul)

A number of documents are initially reviewed to identify currently applicable alterations and their potential priorities for accomplishment. Those items which are identified comprise the initial input to the ship alteration (SHIPALT) package workbook which spells out the best available estimate of the work to be performed (Document examples are: Deferred Naval Board of Inspection and Survey (INSURV) Trial Board Items, Fleet Modernization Program (FMP) and Material Supplement, Current Ship's Maintenance Project (CSMP)).

b. Verification of SHIPALT Status and Applicability (16 months prior to overhaul)

Having compiled a listing of potential alteration candidates, PERA encounters the inevitable task of determining whether all items identified apply to the ship in question. These items must have an assigned priority for accomplishment which is commensurate with its essentiality for improving safety or operations. PERA must determine the item's current status of accomplishment. This is achieved through direct liaison, cross reference of computer data, and documents from external commands plus

recommendations from PERA personnel based on historical data and review. SHIPALTs authorized by NAVSHIPS must be identified by PERA. Then PERA must authorize the ship's planning yard to develop the initial class scope and plans. Due to the non-standardization among classes of ships, PERA then develops the individual ship's SHIPALT planning scope, provides appropriate plans, and identifies material requirements which include those items considered to be long lead-time material.

PERA, during its review, utilizes 3M material and Casualty Report (CASREPT) history reports in an effort to identify potential SHIPALT candidates. These candidates are nominated based upon high failure rates and excessive maintenance requirements.

The need for this amount of verification arises because initial SHIPALT inputs occur so far in advance of the projected overhaul date that the advancements in technology, original requirements for the SHIPALT, and its assigned priority may cause the SHIPALT to be obsolete at the start of the overhaul. Additionally, after a SHIPALT has been programmed, some units find alternative solutions and accomplish the task themselves.

c. Performance of Shipcheck (11 months prior to overhaul)

This shipcheck consists of a detailed review of the alterations to obtain current configuration data and determine if SHIPALT material is onboard or requires

follow-up action by the overhaul activity. SHIPALT candidates are reviewed onboard the ship by the overhaul activity which estimates the cost and man-day requirements for each alteration. Potential SHIPALT candidates are also reviewed in detail with ship's force personnel during the shipcheck.

d. SHIPALT Package Finalization (ten months prior to overhaul)

This involves in-depth reviews of either the total proposed SHIPALT package or selected alterations. PERA conducts this detailed analysis and concentrates on the status of SHIPALT drawings and ensures that an effective alteration package is being provided. Additionally, the status of special program materials is explored for conformance of delivery date with the overhaul schedule date. It is also possible that, as a by-product of this review, unidentified long lead-time materials are discovered and procurement action is initiated.

PERA provides NAVSHIPS with the results of this review and recommends a final SHIPALT package for a specific ship. These inputs assist the SYSCOMS in making their decisions on the SHIPALTs which are to be accomplished during overhaul.

Authorization of the finalized SHIPALT package for NAVSHIPS alterations is made in the form of the 180 day letter issued by NAVSHIPS. Receipt of this letter permits PERA to authorize the overhaul activity to initiate and

expedite material purchases and planning as required to assure timely completion of the alterations during overhaul.

Upon finalization of the TYCOM alteration package, PERA relinquishes its advanced planning responsibilities and the overhaul activity assumes the responsibility. At this point, the overhaul start date is approximately forty-five days away.

2. Planning Repairs

Throughout this task review, the number of commands involved with determining the final repair package is greatly reduced from those engaged in structuring the alteration package. As a result, the communications problem is much simpler. However, advanced planning is much more difficult in the repair area due to last minute breakdowns and major problems discovered during the inspection phase. This task can also be broken down into areas as follows:

a. Determination of Deferred Repair Items (17 months prior to overhaul)

This initial data gathering process encompasses several documents and computer printouts (e.g., CSMP, List of Essential Systems, INSURV Reports).

The initial goal of the PERAs is the identification of those deferred action items and their associated systems which should be incorporated into the repair package and the selection of Detection Action Review Technique (DART) corrective actions that can be implemented during the overhaul. DART is a program established to highlight the

Navy's most serious equipment maintenance problems and through concentrated efforts on each area to initiate corrective actions. Those items designated as "must repair" items comprise the initial input of the repair overhaul work package. Similar to the SHIPALT review, PERA also reviews the latest 3M and CASREPT history to determine equipment with high failure rates and excessive maintenance time in an effort to ascertain if simple repairs or total overhaul is required. This also involves items which could be possible candidates for design modifications (SHIPALTs).

b. Performance of Shipcheck (11 months prior to overhaul)

Prior to the ship's last deployment before overhaul, PERA and the overhaul activity conduct an in-depth review of the identified repair work. This is done by comparing the potential repair items listing developed by PERA with tentative work requests prepared by ship's force personnel. Concurrent with the shipcheck, PERA gives a presentation to the ship's work centers. It covers the type of information that the overhaul activity planners and estimators require on work requests in order to provide meaningful cost estimates. Selected equipment is also tested to aid in determining if repair is required during overhaul and to uncover potential long lead-time material requirements. The equipment selected for testing is determined from historical data and experience. Approximately six months

prior to overhaul, ship's force personnel submit their completed work requests to their TYCOM and PERA.

c. Assembling Work Package (six months prior to overhaul)

Data obtained from the shipcheck is consolidated into the repair work package identifying known work and allowing for potential unknown work items which may occur as a result of the equipment checked under the routine maintenance item "open and inspect."

PERA conducts a review of the work package to determine areas where the full scope and magnitude of repairs remains undetermined. The end result is a listing of equipment which requires further pre-overhaul testing and inspection. Identified in the package is PERA's recommended screening action for the repairs to be performed either by an overhaul activity, a Navy repair ship, or ship's force. This is done commensurate with the capability, and availability of funds and manpower to perform the repairs.

d. Final Preparation for Overhaul (four months prior to overhaul)

PERA, TYCOM, and the overhaul activity representatives board the ship for confirmation of the items in the integrated work package about four months prior to the overhaul start date. All personnel concerned meet with the ship's force to assess the repair package for completeness, update it with the CSMP, and confirm the details in the repair work requests. This data is utilized by the overhaul

activity to make its manpower, material, and dollar estimates for the repair package. During the last underway period prior to overhaul, all major equipment receives a pre-overhaul operational test.

Additionally, PERA assists in defining and scheduling the ship's force repair work and establishing its Ship's Force Overhaul Management System (SFOMS) program. Interface problems between the repairs to be accomplished by ship's force and the overhaul activity are identified and resolved where possible by schedule changes in start and completion dates. Unresolved areas are specified for additional management attention.

e. Approval of Work Package (two months prior to overhaul)

Approximately sixty days prior to the start of the overhaul the final repair package is approved by TYCOM and accepted by the overhaul activity with funding allowances provided for supplemental work requests. The overhaul activity commences full scale action to prepare for the overhaul upon accepting the approved package and as authorized by PERA.

D. OVERHAUL MONITORING

In order to track the overhaul progress for a specific ship, PERA personnel establish milestone charts and schedules for the total overhaul advanced planning effort, identifying all participating activities. These charts are

similar in format to Appendix C. Throughout the overhaul, PERA monitors the progress based on the overhaul activity's published schedule of repairs. One of the key interests of a PERA is to evaluate the effectiveness of its advance planning effort in compiling a concise, well-defined integrated repair and alteration work package. The efforts of PERA are also directed toward establishing a valid data base and developing standard pre-overhaul tests, routine repair requests, and standard shipcheck methodology for the various types and classes of ships. Operating in its position within the organization, PERA is ideally situated to maximize the interchange of information between the user (TYCOM) and the ship's hardware experts (NAVSHIPS). In view of its position, which is essentially a staff function for both commands, and the historical data base developed for each ship by PERA as the life cycle maintenance manager, an increased effectiveness and efficiency of the FMP should result.

IV. PRESENT PREPARATION REQUIRED FOR TRANSFER

A basic premise of this thesis is that the foundation for life cycle maintenance commences prior to the transfer process. When management responsibility for each ship is turned over from the SHAPM to the SLD Director and his associated PERA, this transfer process should include critical data and information which can be utilized as the base upon which the future maintenance and modernization program can be built. In fact, improper preparation of this base, developed during the acquisition period, will reduce the effectiveness of the initial life cycle maintenance program.

Parts A and B of this section identify the current procedures and techniques being utilized to prepare the SLD/PERA for the management responsibility transfer. These parts also provide information on the type of data and documentation which is presently turned over to the SLD on the transfer date. Part C presents a brief discussion on the management and documentation transfer date.

It is important to recognize that the data and documentation requirements of each SLD and PERA vary with different ship classes and mission responsibilities. Therefore, the current preparation and documentation needs of the SLD/PERA organization, identified in this section, are considered to be minimum requirements for any SLD and PERA.

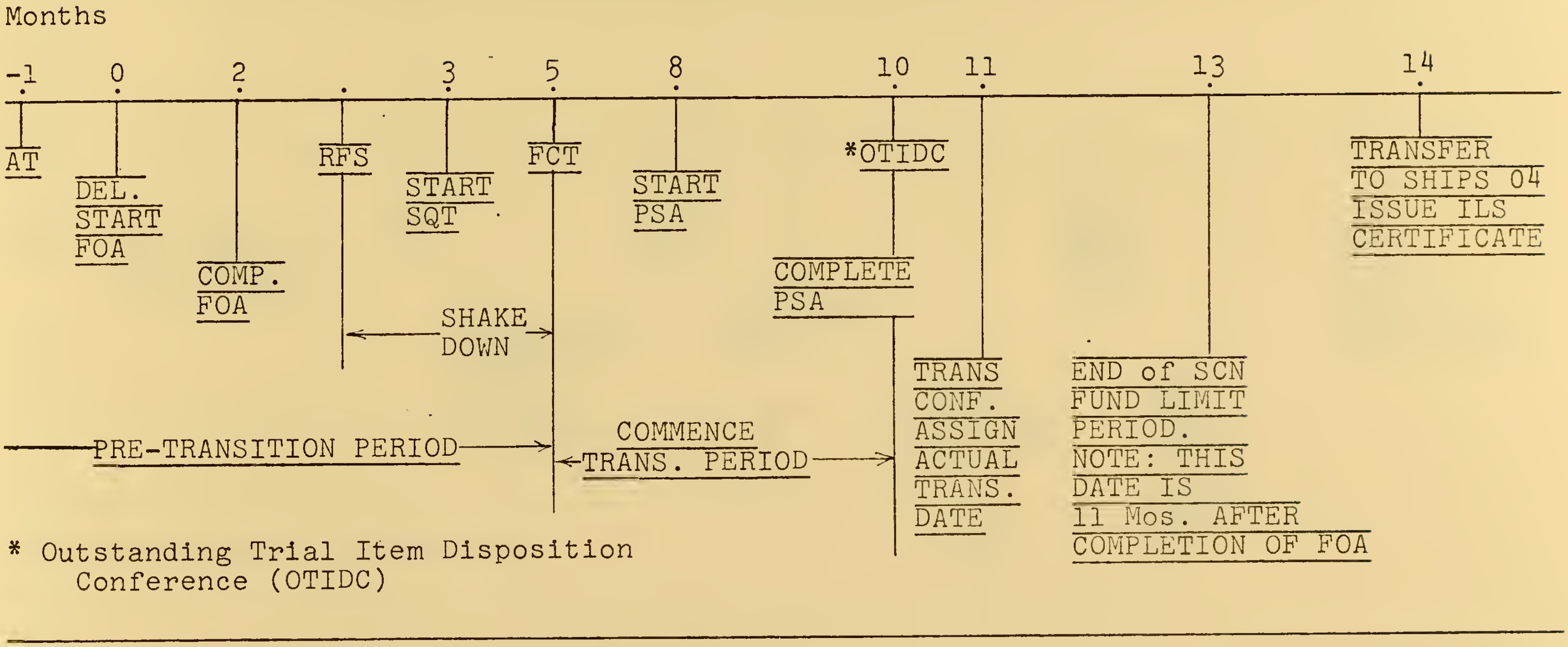
Typical key events which precede the transfer date for both surface ships and submarines are provided in Figures 3 and and 4.

A. PRE-TRANSITION PERIOD

The present transition period for the SLD commences about six months prior to the preassigned expiration date for the Ship Construction Navy (SCN) Funding [5]. The SLD, responsible for ILS after this transition period, is not in the acquisition chain of command but acts as a functional support organization to the SHAPM, with little formal authority. (The importance of the role of the Integrated Logistics Support Manager who reports directly to the SHAPM is noted at this time. This comprises the formal line of communication, relative to logistic support, to the project manager. He is charged by the SHAPM with the responsibility for implementation of the Integrated Logistic Support Plan throughout the acquisition cycle until relieved of his responsibility by the applicable SLD at turnover.)[6]

Logistic Readiness Reviews are conducted periodically to facilitate the interface between the SHAPM and SLD. These reviews are normally a prelude to the transition period and are designed for mutual interchange of information between the participants in the major ILS element areas of:

1. Maintenance Planning
2. Supply Support
3. Support and Test Equipment



* Outstanding Trial Item Disposition Conference (OTIDC)

Figure 3. Typical Key Events for Surface Ships [5]

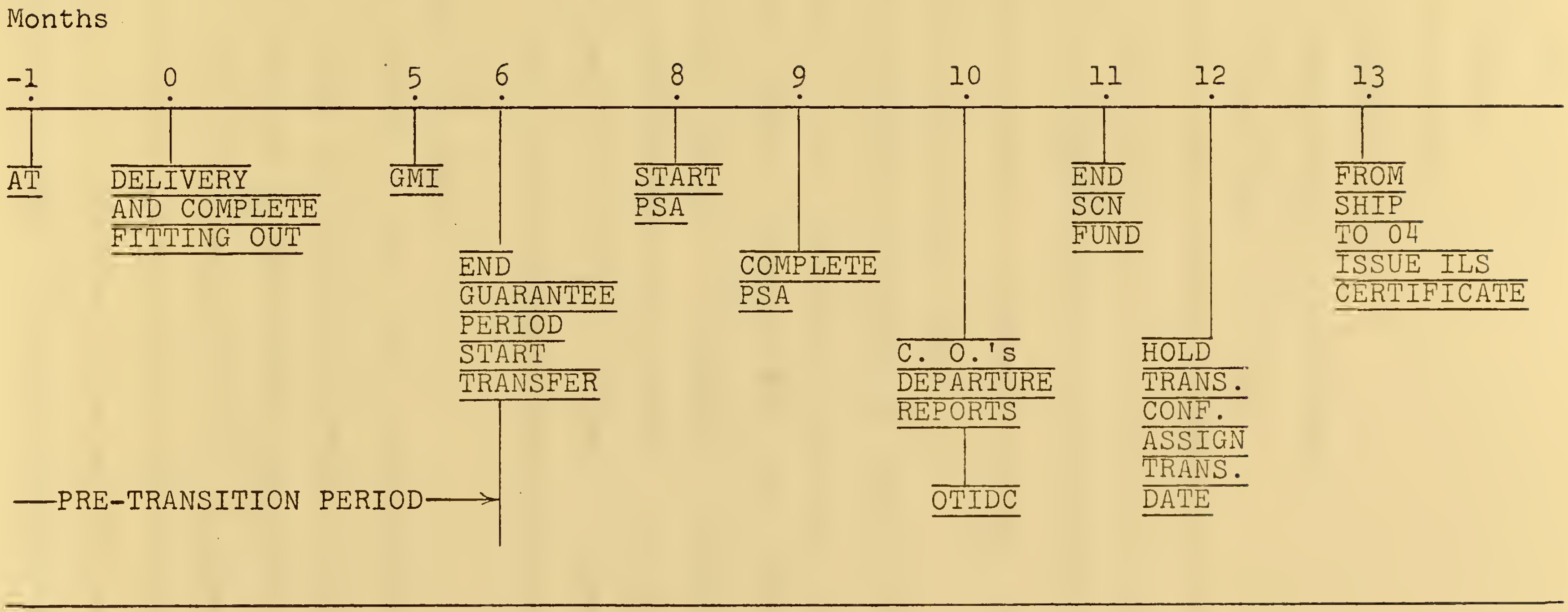

Months
-1
0
5
6
8
9
10
11
12
13
AT
DELIVERY AND COMPLETE FITTING OUT
GMI
END GUARANTEE PERIOD START TRANSFER
START PSA
COMPLETE PSA
C. O.'s DEPARTURE REPORTS
OTIDC
END SCN FUND
HOLD TRANS. CONF. ASSIGN TRANS. DATE
FROM SHIP TO 04 ISSUE ILS CERTIFICATE
PRE-TRANSITION PERIOD

Figure 4. Typical Key Events for Submarines [5]

4. Technical Data
5. Funding
6. Facilities
7. Management Data
8. Transportation and Handling
9. Personnel and Training
10. Additional elements pertaining to the 3M system (Maintenance Data Collection Sub-System (MDCS) and the Planned Maintenance Sub-System (PMS)).

Predesigned questions applicable to each major area are addressed in each review [7].

With the proper frequency of Logistic Readiness Reviews, the status of the documentation and data, with which we are concerned, could be obtained and most deficiencies corrected prior to the transfer of management responsibility. Attention to pre-transition requirements and key events enhances the awareness of the SLD and PERA plus prepares them for the ongoing life cycle maintenance management task.

B. TRANSITION PERIOD

The transition time period is identified in Part A above. During the transition period, the SLD becomes more directly involved in determining the ship's operational and logistic status in preparation for the management transfer.

In addition to the review of the logistic support plan conducted by the SHAPM early during this period, he also prepares and presents to the SLD Director a listing of his

proposed transfer data file. A listing of the types of data that presently may be included in the transfer data file is contained in Table II. The listing presently provides latitude for both the SHAPM's and SLD's input.

Approximately thirty days prior to the SCN Fund Limiting Date, the SHAPM convenes a transfer conference. The agenda items generally include but are not limited to the following:

1. "The Transfer Data File content listing, and/or the data itself, shall be reviewed for completeness and accuracy.
2. "Significant problems, where existing, in addition to those already identified in accordance with NAVSHIPSINST 5430.96 shall be reviewed and corrective actions assigned.
3. "The last supply readiness evaluation report shall be reviewed for establishing responsibility for corrective actions for deficient supply items.
4. "The transfer memorandum, discussion on agreed to transfer date, etc.
5. "The 'ILS Certificate,' discussion on contents of, etc."[2]

It is also the prerogative of the TYCOM, when he considers it necessary, to request an Outstanding Trial Item Disposition Conference (OTIDC) with the SLD during this period. The purpose of the OTIDC is to determine the disposition of INSURV trial items which have been determined not to be the SHAPM's responsibility (government responsible items).

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[2] NAVSHIPSNOTE 5400, Life Cycle Management Manual, 13 December 1972, p. 8-9.

Table II. Listing of Material to be Included in the Transfer Data File[3]

1. A copy of the Ship Acquisition Plan.

2. A copy of the Ship's Data Indices (To include Technical Manuals, Ship Drawings and General Drawings Indices).

3. A copy of the Ship's Operating Documents (To include General Improvement Booklet, Ship's Information Guide, Propulsion Operational Guide, Operational Station Booklets, etc.)

4. A copy of the Ship's Manning Document.

5. A set of the approved ships characteristics with a copy of pertinent documentation pertaining thereto.

6. Status listings of all trial items with SHAPM responsibility for special material for authorized but incomplete trial items and of deferred trial items.

7. Portions of the Training Material Support package for the ship and its system/equipments that identify what remains to be done, and/or any known problems.

8. A brief chronological history of the project.

9. Copies of supporting information on class items.

10. A list of authorized items or tasks that were not accomplished due to SCN funding expiration.

11. A list of known technical and logistic problems with current status.

12. Final DD-1423 to indicate data provided and data recipients under the contract. In event a DD-1423 was not required by contract procedures at the time the contract was issued, the SHAPM shall provide a list of deliverable contract data available.

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[3] Ibid., p. 8-7.

13. A list of all approved class items Headquarters Modification Requisitions with status of each shall be made available for the SLD's use and transferred to the SLD after final settlement of the contract.

14. A Plan for Support, if a formal plan was not developed, indicate the type of support, i.e. Navy, Industrial, etc., that is required and identify unusual problems.

15. The name of the SHAPM contact for future inquiries.

16. The status of the planned maintenance sub-system (PMS) including identification and projected delivery dates for missing PMS documentation.

17. The product baseline configuration documentation if developed.

18. For submarines: Detailed studies of sub-safety certification, design review, and all factors which can or do affect continuity of certification.

19. Other items as appropriate which may include special industrial support and unusual pierside hotel service considerations, etc.

20. Where a trial item disposition conference is held, the applicable SLD shall provide a status listing of outstanding INSURV trial items (those not considered to be SHAPM responsibility) with recommended disposition action.

C. DATA, DOCUMENTATION, AND RESPONSIBILITY TRANSFER DATE

A transfer date is little more than a pre-established time to formally transfer documents, data, and management responsibility relative to logistics support. With proper advance preparation there is no new information or data requirements presented by either the SHAPM or the SLD on this date.

> "The change in management responsibility within NAVSHIPS is characterized by the transfer of documentation which identifies and details the planned support of the ship at all levels of maintenance for its programmed life cycle. Successful management of an acquisition or conversion is realized in part by the SHAPM having considered, planned, and provided a timely and effective integrated logistic support package for the ship. The products of these efforts are reviewed by SHIPS 04 prior to the transfer of management responsibility. Equally important as documentation is the orderly and smooth transition of management from SHAPM staff to the appropriate Ship Logistic Division (SLD). A shared responsibility during this transition exists to achieve and maintain a high degree of cooperation and exchange of information between personnel of the respective organizations. All usual methods of communication such as copies of correspondence, meetings, briefings, ILS team sessions, periodic reports, etc., should be fully utilized as early in the acquisition phase as practicable."[4]

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[4] Ibid., p. 8-4.

V. RESEARCH RESULTS

A. BACKGROUND

As stated in Section I, seven sources were utilized in this research effort and provided the data upon which the results of this section are based. Parts B and C pertain to the questionnaire. Part D presents the specific and general needs of the SLD/PERA identified by this research effort. These needs supplement current instruction requirements.

Initial background on PERA and the perceptions upon which the thesis hypothesis was formed were obtained through personal interviews with PERA personnel and the Director of Combatant Support Ship Logistic Division at the PERA(CSS) project office. This was supplemented by reference material, which included samples of turnover conference agenda, transfer plans, and NAVSHIPS and the Naval Material Command (NAVMAT) instructions relating to the management transfer process.

Using this information, a questionnaire was formulated and distributed to ten SHAPMs and twelve SLD/PERA offices as enumerated in Appendix A. The objective of the questionnaire was to obtain information about the transfer process which was not stated in sufficient detail in applicable instructions for our purposes. This approach was also utilized to confirm/refute perceived problem areas in the

process. Some questions were asked both SHAPMs and SLDs/PERAs, and others were directed to one or the other. It was felt that a combined questionnaire would give SHAPMs and SLDs/PERAs a better insight into the entire approach of the inquiries. Responses were encouraged by SHAPMs to questions addressed to SLDs/PERAs and vice versa in order to get the perceptions of both sides. This approach proved to be helpful. It highlighted some problem areas which were emphasized by either a SHAPM or an SLD/PERA and not perceived by the other. Of the 22 questionnaires distributed (23 counting PMS 393's response for the Sturgeon and Los Angeles Class nuclear attack submarines), nine SHAPMs and seven SLD/PERA offices responded.

B. QUESTIONNAIRE METHODOLOGY

To achieve the objectives stated above, questions were structured to facilitate analysis of the responses (see Appendix A). The results of most questions were straightforward; however, a few responses had to be followed up by telephone conversations to respondents in order to clarify certain aspects of the responses. A few questions were asked merely to obtain sufficient background information to place responses in perspective. Other questions addressed different aspects of the transfer plan which included:

1. Adequacy of the present instructions.
2. Period when each plan was implemented.

3. Amount of input and type of data the SLDs/PERAs required.

Finally, the SHAPMs were questioned on the priorities and pressures inherent in the position of Project Manager (PM). It was desired to ascertain if the PM could be or, more specifically, should be solely responsible for making cost, schedule, and performance trade-offs with respect to problems that have immediate impact on the project rather than problems which will impact the project after the SLD/PERA has assumed responsibility through the transfer process.

C. QUESTIONNAIRE RESULTS

The results of the questionnaire are numbered and presented below in the same order in which the questions appeared. The question itself is provided to assist the reader in following the results.

Q1. Where in the acquisition phase is your program?

R1. All but one of the SHAPMs were in the later phases of the acquisition cycle, either full-scale development or production.

Q2. Does your project have a formal Transfer Plan?

R2. Two SHAPMs did not have a formal Transfer Plan. Neither had yet reached the production phase.

Q3. If answer to 2. is NO, are there plans to implement one in the future?

R3. Both SHAPMs that did not have a plan intended to

implement one in the future.

Q4. When in the acquisition phase was the Transfer Plan first used as a management tool?

R4. In one case, the formal Transfer Plan was reported to have been used as a management tool as early as contract definition. For the most part, however, it was not used until the production stage. In some cases, the formal Transfer Plan was not promulgated until required by instruction six months prior to formal turnover.

Q5. Does your Transfer Plan include turning over the following items? If your plan does or does not include the item and you feel it is unnecessary, so state. (See Appendix A for listing.)

R5. Two SHAPM's reported all the items were in their transfer plan and were necessary. One SLD felt only five of twenty eight items listed were necessary. However, with these exceptions, the SLDs/PERAs agreed with all but one or two items listed. SHAPMs in general did not include from seven to sixteen items with an average of eleven items omitted because they felt they were unnecessary or that other organizations such as Naval Ships Engineering Center, Supervisor of Shipbuilding Construction and Repair, Naval Supply Depot or Planning Yard were handling that specific document.

Q6. In your work as a PM or SLD Director, do you find it necessary to interface with the applicable SLD/PM? How often?

R6. SHAPMs and SLDs indicated predominately weekly contact throughout, however, most agreed the amount of contact increased from monthly to weekly as the acquisition cycle advanced. One particular SHAPM/SLD team indicated early implementation of Logistics Readiness Reviews had proved highly successful. That particular SHAPM also favored SLD input into the preliminary design reviews..

Q7. In your work as a Project Manager, do you feel that your priorities allow you to adequately consider any or all of the below areas which affect the ship, mostly after the SHAPM has turned over control to the applicable SLD/PERA?

Q7a. SLD inputs in areas where present cost will not allow installation of specific equipment but certain actions (structural reinforcement) on your part will facilitate its accomplishment during the operational phase at considerably cheaper cost to government at that time.

R7a. The SHAPMs responded, yes, unanimously.

Q7b. Incentivization of provisioning technical documentation to allow for competitive buys on reprovisioning (plans in sufficient detail and in time to permit competition).

R7b. This question was not utilized because it was not understood.

Q7c. Engagement with the contractor in areas of Technical Manuals, Ship's Information Books, etc., to ensure they're workable, or is it just an item that's checked off as completed?

R7c. Responses were also unanimous toward engagement with respect to contractor's document requirements. One SHAPM indicated that individual technical

manual proofing during first ship mission demonstration is being utilized.

Q8. At what stage in the Acquisition Phase is initial spares provisioning addressed?

R8. Responses were varied throughout the acquisition phase from concept formulation to production.

Q9. Does SHAPM provide for review of the provisioning documentation necessary for reprovisioning?

R9. This question was disregarded because respondents interpreted it differently.

Q10. Do you feel the present Transfer Plan Instruction (NAVSHIPS 5430.91B) is adequate for successful transfer?

R10. Most respondents felt it was adequate. One SHAPM stated that SLDs were not involved enough with developing the ILS plan for a new ship.

Q11. Have any of your personnel attended a Turnover Conference?

R11. Although this question was not addressed to them specifically, four SHAPMs indicated that personnel on their staffs had attended turnover conferences at one time and had found them beneficial. SLDs/PERAs also indicated that they had attended and that the conferences were beneficial. Some PERAs indicated that they had not received conference agenda prior to the meeting which somewhat inhibited their effectiveness.

Q12. Does your PERA receive adequate documentation of criteria used to develop particular equipment reliability?

R12. Responses from SLDs/PERAs indicated that they feel that the PERAs, through the SLDs, are not receiving adequate documentation in this area.

Q13. Does your PERA receive adequate documentation of original acceptance tests and their approved results, i.e., Do you suspect operational ships being tested beyond that which they were designed and originally tested?

R13. The SLDs and PERAs feel they aren't receiving adequate documentation of original acceptance tests and their approved results. In fact, they suspect operational ships are being tested below or beyond that for which they were designed and originally tested. Additionally, test sequencing is often critical. If the original test memorandum is not transferred, this sequencing may go unnoticed.

Q14. Does the contractor initiate and maintain an equipment installation, lightoff, test, operation, and maintenance history for each onboard equipment? Who is responsible for its input into the 3M system and is your data an input into 3M?

R14. SHAPMs, for the most part, are requiring contractors to maintain equipment installation, lightoff, test, operation, and maintenance history for each onboard equipment, although some are only doing this in the main propulsion subsystem. The SHAPMs' responses as to who was responsible for placing

this historical data base into the 3M system included Supervisor Shipbuilding Conversion and Repair (SUPSHIPS), ship's force, SHIPS 045/SHAPM jointly, and SHAPM. One SHAPM felt that data should not be placed in the 3M system. SHAPMs indicated no inputs were made into the 3M system, with one exception.

D. ADDITIONAL RESULTS

The following research results were obtained from interviews and telephone conversations with personnel involved in the transfer process:

1. PERA organizations, who are oriented toward specifics, expressed the need for information in addition to that required by the existing transfer instruction. They provided suggested specific documentation additions. These additions were consolidated and made a part of Section VI.

2. Some documents which are a part of the transfer process are not turned over to SLD/PERA for further distribution to planning yards and other activities requiring these documents. Instead, they are transferred directly by the activity responsible for providing the particular document (e.g., Contractor, SUPSHIP, SHAPM). Review of past transfer conference proceedings revealed that direct receipt of documentation by this procedure was not always confirmed.

3. Through discussions with the Trident ILS Manager, the concept of Logistic Support Analysis (LSA), being

utilized presently by the Trident Project, appeared to have applicability to this thesis area.

For those unfamiliar with the LSA concept,

> "LSA is a process by which the logistics support necessary for a new system/equipment is identified. It includes the determination and establishment of logistics support design constraints, consideration of those constraints in the design of the 'hardware' portion of the system, and analysis of design to validate the logistic support feasibility of the design, and to identify and document the logistic support resources which must be provided as a part of the system/equipment to the operating forces. Analytical techniques used to determine limited aspects of logistic support requirements are a part of the overall LSA process. (An example would be Operational Sequential Diagraming used to determine operator task, task times, and skills.)"[5]

The purpose of LSA is to obtain an optimum integration of logistic support with system design through an iterative process commencing with the concept formulation phase and continuing through the life cycle of the system. Based on government and contractor input parameters, this should minimize logistic impact and cost during system use. LSA assists the design engineer in evaluating the impact of design changes on established logistic support parameters. Finally, LSA identifies the logistic support requirements to support the end item [8].

> "It integrates all the various logistic support elements by considering the interfaces between logistics and functional elements."[6]

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[5] Military Standard 1388 (Proposed), Logistic Support Analysis, 31 August 1972, pp. 10-2, 3.

[6] Ibid., p. 10-4.

One of the key advantages to LSA is that it becomes the government's system to be retained and updated upon completion of the contract. This eliminates data translation problems because "Our system is the Contractor's system."

VI. RESEARCH ANALYSIS AND CONCLUSIONS

The analysis and conclusions of this section are based on the results of Section V. Several results are related and therefore have been considered collectively. It is concluded in general that the hypothesis of this thesis, that (1) a data transfer process currently exists but receives inadequate priority, and (2) the data requirements are not all inclusive, is supported by this research effort. This general conclusion is sustained by the following analysis and specific conclusions. Conclusions are indented and single-spaced.

A. SHAPM AND SLD/PERA INTERFACE

Review of the research results indicated that, in general, the SHAPM and SLD are conforming to the general intent of NAVMATINST 4000.20A which states,

> "Each action and decision made throughout the system/equipment life cycle affects the logistic support requirements of the system/equipment. To achieve the requisite capability, logistic support planning must begin during the conceptual or equivalent phase."[7]

However, analyses of the research results indicate that a PERA organization normally does not commence interfacing with a ship project until just prior to the transition

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[7] NAVMATINST 4000.20A, Integrated Logistic Support Planning Policy, 18 March 1971, p. 3.

period. Therefore, PERA is totally dependent upon its SLD to effect an early information interchange with the SHAPM to identify the PERA's specific document requirements.

> Each PERA should maintain a current listing of each document required for its specific life cycle maintenance task and insure that its SLD is cognizant of each modification thereto.

It does not appear that the SLD has participated with the SHAPM in all instances in conducting early ship design reviews. Such a review would permit the SLD to analyze the project early and assist in identifying the logistic requirements essential to the ship's operational phase of the life cycle. Additionally, this is an opportunity to incorporate into the early planning phase, lessons learned from previous experience, relative to logistic needs.

Logistic Readiness Reviews are required for each ship by NAVSHIPSINST 5430.96. There is no identifiable date, in relation to the early life cycle of a ship, when the first or subsequent reviews are required to be conducted. This provides latitude for the SHAPM and SLD to establish their own frequency and schedule for interfacing.

> A Logistic Readiness Review should be conducted at certain key milestones which could be considered critical to the success of the ILS plan (e.g., Prior to design and development, finalization of the procurement request, delivery).

One Management Responsibility Transfer Plan reviewed called for a quarterly Logistic Readiness Review at which

time the SHAPM would brief the SLD on the acquisition status and problems. The SLD Director would, in turn, inform the SHAPM of active fleet problems that might impact on design and/or the logistic posture for the ship [9]. This plan had also been approved jointly by the SHAPM and SLD Director which assured that both key managers were aware of the documents which were to be included in the transfer data file.

> Detailed Logistic Readiness Reviews of this frequency will increase the active participation and enhance the awareness of the SLD relative to the readiness and status of the ship prior to the transition period. This review would be in addition to daily and weekly contact between the SHAPM and SLD relative to specific problems of mutual interest.

Analysis of questions which are to be asked during Logistic Readiness Reviews disclosed that some of the major documents (see Table II) required in the Transfer Data File are addressed concurrently with the review of each major ILS element area.. However, during this review, there appears to be no direct reference to, nor requirements for, reporting the status or discussing all the documents which are ultimately to be included in the transfer file. Analysis of research data indicated that, in general, all documents to be transferred are identified only when the SHAPM prepares the Management Responsibility Transfer Plan (generally during the production phase; see Section V results to question 4) or upon his compilation of the Transfer Data File during the transition period.

The potential value of the Logistic Readiness Review technique for each SHAPM and SLD was highlighted by the analysis of a Logistic Readiness Review Report [10]. This was also confirmed by the SHAPM/SLD team which successfully utilizes it as a management tool.

> The conclusion from the above argument is that the status of documentation and data could be obtained and deficiencies corrected prior to the transfer of management responsibility by proper scheduling and appropriate discussions during Logistic Readiness Reviews.

It must be kept in mind that the SLD is in a functional position in relation to the SHAPM. An ILS Manager and his staff, responsible only to the SHAPM, is directing the logistic support program, including data and documentation requirements, for each ship. The SLD/PERA is essentially only a beneficiary or user of the effort or data provided from the SHAPM office. Thus, the SLD can only request certain data requirements rather than approve their being provided. It appears evident that the SLD/PERA Directors have different priorities and requirements for documentation from those of some SHAPMs. Perhaps this is understandable since technical problems arising during acquisition normally contain short range requirements with immediate impact while logistic problems usually have long range implications. Therefore, the logistic need is not weighted as heavily as the technical need and receives less emphasis and lower priority. The lack of organizational authority of the SLD in the procurement process coupled with the potentially

changing priorities of the logistic needs versus the technical needs, leads to the following conclusion:

> During the acquisition phase the SLD lacks the necessary organizational authority to assure that all short and long range logistic requirements will be provided as required after management responsibility transfer.

Several alternatives were analyzed for resolving the SLD's lack of authority in the acquisition phase. Having the SHAPM and SLD Director on the same organizational level, each with a distinct area of authority and responsibility to insure that a highly reliable and operational ship was provided, appeared to conflict directly with well founded management principles that particularly apply to the military establishment. An example of these principles is the primacy of vertical relationships and the need for unity of command [11]. These and other "old wives tales" of management theory have been disproved by managers in the intricate business world of today. The organizational structure in which project managers operate is an excellent example of the complex world in which managers currently exist. The horizontal relationships of managers, where cooperation and "moralsuasion" are utilized to achieve goals, are being emphasized more every day as those which get the job done [12].

Keeping this in mind, the authors feel that the concept of two managers on the same project with major areas of responsibility is not unreasonable. Both managers would

have the same ultimate goals in mind. Also their individual desires to not have higher authority constantly doing their jobs would keep the problems that could not be resolved to a minimum.

B. TRANSFER PLAN MODIFICATIONS

Based on the differing viewpoints of the SHAPMs and the SLDs/PERAs regarding information required in the transfer plan (see question 5 results), it was disclosed that most SHAPMs and SLDs do not share the same priority relative to the type information that is required. The SLD/PERA viewpoint was solidified by their inputs of suggested additional documents required by their offices at transfer which is included as Table III. Also, on particular items, comments such as, "Not necessary, ship's force received this directly from SUPSHIPs," led the writers to conclude:

> Certain SHAPMs felt that the transfer plan only included items turned over from the SHAPM directly to the SLD Director on the transfer date.
>
> It was also concluded that implementation of the transfer plan predominately during the production phase did not ensure that the SLDs and PERAs had sufficient inputs to the conceptual and advanced development phases, especially with respect to the document input to the contractural package.

In addition, from the SLDs'/PERAs' concern over inadequate documentation to the government of equipment list memos, results, and reliability goal criteria, it was concluded:

Table III. Listing of Additional Material to be Included in the Transfer Data File

The following items are specific requirements under Selected Record Data [13]:

1. Damage Control Books.
2. Submarine Safety Certification Boundary Book.
3. Operating Station Books.

Other items include:

4. Booklet of General Plans.
5. Detailed Weight and Moment Status Report.
6. Docking Plan.
7. COSAL (Class).
8. APL for newly installed equipment.
9. Machinery Operating History.
10. Schedule of Watertight Integrity Test and Inspection.
11. Booklet of Tank Sounding Tables.
12. Tank Capacity Tables and Curves of Vertical CG.
13. Shipbuilding Specifications (Up-to-date).
14. Change Order File (Including each considered with documentation).
15. Integrated Test Package.
16. Copies of Original Test Memorandums (Signed and Applicable Drawings).
17. Test Memorandum Index.
18. Test Sequence Networks.

19. Test Information File (Including problems encountered).

20. Test Resources Requirements Schedule.

21. Photographs of Ship (Quarter, Profile, Antenna Views).

22. Listing of GFE actually installed.

23. Listing of items scheduled for accomplishment during PSA but were deferred due to schedule or fund limits.

24. Listing of SHIPALTS, ORDALTS, ECPs, EFCs accomplished.

25. Copy of INSURV Reports.

26. Listing of Equipment Design Studies being performed by NAVSEC or other agencies.

27. Future Characteristics Changes (FCC) File.

28. Listing of technical and logistic problems received from the fleet, including the status of allowance shortages of both storeroom and operating space items.

29. Copy of Integrated Logistic Support Plan.

30. Copy of the final Supply Readiness Evaluation Report.

31. Transfer Conference Meeting Minutes.

32. Listing of and copies of all waivers approved by the government for design requirements.

> More emphasis should be placed on documentation of the above areas in the present transfer instruction.

C. LOGISTIC SUPPORT ANALYSIS

The responses from SLDs/PERAs indicated a need for adequate documentation in several areas discussed in part A of this section. Also the need was expressed for adequate tracking and documentation of many contractor tasks. These needs are compounded by the problem of ensuring that contractor data is compatible with Navy systems.

> Therefore, it was concluded that there is a requirement for a data management plan which includes a data bank common to the contractor and the government.

VII. RECOMMENDATIONS

The conclusions enumerated in Section VI are the foundation for the recommendations listed below.

1. Logistic Readiness Reviews should be conducted concurrently with certain key milestones and at a prescribed time commencing in the conceptual phase. All documentation and data which is to be transferred should be separately addressed, relative to adequacy and problem areas, during these reviews.

2. Two alternatives are recommended to alleviate the SLD's apparent lack of control and to assure that all logistic support requirements are fulfilled in a timely manner. First, the SLD Director, who will be responsible for life cycle management after transfer and who will be the ultimate user of the logistic support program after the SHAPM has fulfilled his commitments, should have equal authority to that of the SHAPM. The responsibility would be split to the extent that the SHAPM continues to have ultimate authority for all technical decisions which impact on any performance requirements and the SLD would have authority for ILS decisions. Both the SHAPM and SLD would be given a budget. Conflicts which could not be mutually resolved between the two would require a decision from designated higher authority. In no case would funds be transferred between the two without notification being

provided to higher authority of the intended action. Second, the SLD Director should be given a charter for making all ILS decisions, subject to the SHAPMs concurrence, including having members from his SLD staff function in a line position in the SHAPM's organization. This staff would also be responsible to the SLD Director. Resolution of areas of conflict between the SHAPM and SLD would be by designated higher authority. This technique permits the SHAPM to maintain control of the overall budget but unable to make decisions which could impair the effectiveness of the long range logistic support program without the SLD's knowledge.

3. The following recommended changes to NAVSHIPSNOTE 5400, which includes the present transfer instruction, are proposed:

a. Retain the present instruction as general guidelines to the SLD. The SLD, in turn, will take these guidelines during the conceptual phase and formulate the proposed transfer plan for the particular class of ship in question. This plan should include a comprehensive table of the documents which the applicable SLD, with inputs from its PERA, feel are required for the life cycle maintenance of the ship class. Table II and Table III are included as examples of elements that should be considered in compiling the required ship class documents. Table II is extracted from the present instruction and Table III is a listing of items compiled from SLDs'/PERAs' research inputs in addition

to those enumerated in Table II.

This proposed plan is then sent from the SLD to the applicable SHAPM for his approval. The SLD's proposals should be individually considered by the SHAPM and be the basis of the approved plan promulgated by the SHAPM. The final comprehensive table should state the document, the activity developing the document, and who is responsible for tracking its progress and for reporting its status as of the transfer date. It should be noted that this in no way relieves the SHAPM of the ultimate responsibility for all these items until the transfer date. This thesis recommendation can also be implemented with the added powers of the SLD, recommended in two above. The SHAPM's recommendation on table content would then be necessary prior to the SLD implementing the plan.

If the plan is implemented in this fashion preparation required for the purchase request in this area should be minimal. In addition, since the SLD/PERA and other activities of NAVSHIPS are the primary users of these documents, money is saved by obtaining only the documentation required by these activities. It is realized that, due to dollar constraints, the documents proposed originally by the SLD may not all be approved. However, after the approved list comes through, at least the SLD will know the exact number of documents not approved that will require additional operating funds in the future.

b. Modify NAVSHIPSNOTE 5400 to direct added attention to contractor documentation of equipment test memos, results, and reliability goal criteria.

c. Modify NAVSHIPSNOTE 5400 to state,

> "Emphasize the documentation of the intended SHAPM action regarding INSURV items identified as government responsibility during final contract trials, in order to assure sufficient funds are programmed for corrective action. Action generally falls into one of the following categories:
>
> 1. Correct during PSA with SCN funding.
> 2. Initiate equipment procurement for future replacement.
>   a. Before SCN funding expires.
>   b. After SCN funding expires.
> 3. Develop change orders to incorporate improvements into follow-on ships in the class.
> 4. Designate as a class item for which a SHIPALT may have to be written to correct the situation on the ship inspected (SHAPMs should provide the SLDs with sufficient background later to facilitate SHIPALT development.)"[8]

d. Modify the distribution list to include all PERAs.

4. It is recommended that the recently developed Logistic Support Analysis Technique, presently being implemented for the Trident Submarine Project, be extended to all Navy ship construction if the Trident LSA program proves successful. In addition, the authors feel the Navy should implement an on-line capability to this system. This would

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[8] Director, Combatant Support Ship Logistic Division Letter, 20 July 1973, p. 1.

enable the Navy to utilize the data on a real-time basis even prior to completion of the entire production run (i.e., some ships of the class operational and some yet to be deployed). It would also enable the Navy to interface with other systems and components in the data bank.

APPENDIX A

Sample Questionnaire with Distribution List

SHAPM TO SLM TRANSFER PLAN QUESTIONNAIRE

The following explanation is provided to clear up any ambiguities that might arise while filling out the questionnaire.

For YES/NO answers circle your choice. Otherwise, check the appropriate response. All questions have an (S), (P) or (S/P) preceding them. The (S) questions pertain to SHAPMs, and the (P) questions pertain to SLMs and PERAs. Some questions are to be filled in by both. All questions are included in one questionnaire so you can comment on the types of questions, in general, if you desire.

Space is provided at the end of this questionnaire for responses of this nature or any additional comments. Please indicate the applicable question, where appropriate, if you utilize this section. Your time and effort in answering this questionnaire are greatly appreciated.

SHAPM TO SLM TRANSFER PLAN QUESTIONNAIRE

(S) 1. Where in the acquisition phase is your program?

a. Conceptual _____
b. Advanced Development _____
c. Full Scale Development _____
d. Production _____
e. Deployment _____

(S) 2. Does your project have a formal Transfer Plan? YES/NO
(If YES, we would appreciate a copy)

(S) 3. If answer to 2. is NO, are there plans to implement one in the future? YES/NO/N.A.

4. When in the acquisition phase was the Transfer Plan first used as a management tool?

a. Advanced Development _____
b. Commencement of Full Scale Development _____
c. End Full Scale Development _____
d. Beginning Production Phase _____
e. Six months prior to turnover of data to the SLM, NAVSHIPS 04 in preparation for turnover conferences _____
f. Never _____
g. No plan _____

(S/P) 5. Does your Transfer Plan include turning over the following items? (Check YES or NO) If your plan does or does not include the item and you feel it is unnecessary, also check NOT NEC.

	YES	NO	NOT NEC.
a. Manufacturer's Technical Manuals			
b. Ship's Information Books			
c. Damage Control Books			
d. Detailed Construction Drawings			
e. Training Aid Booklet			
f. Propulsion Operating Guide			
g. Ship's Acquisition Plan			
h. Booklet of General Plans			
i. Ship Drawing Index			
j. Technical Documentation Index			
k. Approved Ship's Characteristics			

		YES	NO	NOT NEC.
l.	Ship's Manning Document	___	___	___
m.	Detailed Weight and Moment Status Report	___	___	___
n.	Priced list of all final trial deficiency items	___	___	___
o.	Docking Plan	___	___	___
p.	ILS Plan	___	___	___
q.	Contractor/Government Test Data	___	___	___
r.	PMS Documentation (including MRC's)	___	___	___
s.	COSAL	___	___	___
t.	APL's	___	___	___
u.	Machinery Operating History (Contractor provided from day 1)	___	___	___
v.	Schedule of Watertight Integrity Test and Inspection	___	___	___
w.	Booklet of Tank Sounding Tables	___	___	___
x.	Tank Capacity Tables and Curves of Vertical CG	___	___	___
y.	Shipbuilding Specifications	___	___	___
z.	Outstanding Engineering Change Orders	___	___	___
aa.	List of special Naval Training Courses or schools, not listed in the training course index, known to have been established specifically or need to be established in support of new equipment or sub-systems in the ship	___	___	___
bb.	Brief chronological history of the project with emphasis on technical problems and decisions	___	___	___

(S/P) 6. In your work as a Project Manager (PM) or Ship's Logistics Manager (SLM) do you find it necessary to interface with the applicable SLM/PM? (circle one)

If yes, how often: (check one)

Weekly___Biweekly___Monthly___Less___

(Give approximate stage of acquisition phase when your opposite was first contacted.)

____

(S) 7. In your work as a Project Manager, do you feel that your priorities allow you to adequately consider any or all of the below areas which affect the ship, mostly after the SHAPM has turned over control to the applicable SLM/PERA?

a. SLM inputs in areas where present cost will not allow installation of specific equipment but certain actions (structural reinforcement) on your part will facilitate its accomplishment during operational phase at considerably cheaper cost to government at that time. YES/NO

b. Incentivization of provisioning technical documentation to allow for competitive buys on reprovisioning (plans in sufficient detail and in time to permit competition) YES/NO

c. Engagement with the contractor in areas of Technical Manuals, Ship's Information Books etc., to ensure they're workable, or is it just an item that's checked off as completed?

ENGAGEMENT_____
CHECKED OFF____

(S) 8. At what stage in the Acquisition Phase is initial spares provisioning addressed?

____

(S) 9. Does SHAPM provide for review of the provisioning documentation necessary for reprovisioning? YES/NO

(S/P) 10. Do you feel the present Transfer Plan Instruction (NAVSHIPS 5430.91B) is adequate for successful transfer?

YES________
NO_________
TOO GENERAL________
TOO DETAILED_______
OTHER__________________________________

(P) 11. Have any of your personnel attended a Turnover Conference? YES/NO

If YES,

a. Was it beneficial? YES/NO

b. Were you given a copy of the conference agenda prior to the meeting in order to adequately prepare? YES/NO

c. Did you feel you were able to take an active part in the discussion? YES/NO

(P) 12. Does your PERA receive adequate documentation of criteria used to develop particular equipment reliability? YES/NO

(P) 13. Does your PERA receive adequate documentation of original acceptance tests and their approved results, i.e., Do you suspect operational ship's being tested beyond that which they were designed and originally tested? YES/NO

(S) 14. Does the contractor initiate and maintain an equipment installation, lightoff, test, operation, and maintenance history for each onboard equipment? YES/NO

If YES, answer the following:

a. Who do you feel is responsible/should be responsible for accepting this data and placing it into the 3M system?

____

b. During contractors operation of the equipment (in their ship and after installation onboard) are failures and their causes recorded to commence a reliability/availability/maintainability history for each item in the system? YES/NO

c. Are "a" and "b" currently inputs to the 3M system? YES/NO

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"	(ASC)
"	(CSS)

APPENDIX B

Specific Authority and Responsibilities of Pera [1]

1. The Naval Ship Systems Command is responsible for total system integration with respect to the maintenance and logistic support of ships and craft. The PERAs perform a NAVSHIPS field function to insure that planning and engineering is accomplished to enable timely completion of overhauls at minimum cost while maintaining prescribed levels of quality assurance. To attain this objective, Fleet and Type Command participation is essential.

2. PERA is assigned authority and responsibility as described herein, for the management and control of assigned resources, planning, scheduling, and the preparation of management plans for implementing PERA Programs for insuring a successful overhaul. In this connection, PERA Directors are assigned additional duty to NAVSHIPS.

3. In execution of its assigned tasks, PERA has authority for direct contact with other activities, organizations and commands directly associated with the program in order to insure optimum communication between all participants.

4. PERA shall respect the authority and responsibility of NAVSEC to develop and establish engineering policy and criteria and to require such action as necessary to assure SHIPS 04 that plans and specifications meet sound engineering policy. If PERA over-rides or makes changes to these policies, SHIPS 04 and NAVSEC shall be advised and PERA will assume full responsibility. If a questionable area is referred to SHIP 04 for decision, responsibility will lie there.

5. Within the framework of management, financial and technical control stated in NAVSHIPSINST 5430.79B, the Director, PERA shall have the specific authority and responsibility to:

a. Manage advanced planning for complex ship overhauls. In coordination with the Fleet and other activities and based on modernization planning documents, develop for each assigned overhaul a proposed total-ship integrated alteration and repair work package. Submit alteration and repair packages to NAVSHIPS and TYCOM, as appropriate, for review and approval. Provide necessary software; drawings, including bills of material; job summaries; and test, inspection and special tool requirements for each approved

item in the integrated work package.

b. Identify headquarters-managed special programmed and installing activity procured long lead-time material and provide the appropriate Ship Logistic Division Director, material manager, or Type Commander with information necessary for effective procurement planning. When tasked, PERA will further insure timely ordering and delivery of this material.

c. Accept tasks from the Type Commanders and perform same in accordance with general policy and overall guidelines provided by NAVSHIPS.

d. Assist the overhaul yards in the procurement of materials by furnishing bills of material and other guidance.

e. Provide guidance to NAVSHIPS and stocking activities for large-volume, short lead-time items required for an overhaul.

f. Coordinate use of special material for program managers such as ASW, SMS, and Sub-safe alterations and repairs.

g. Manage interrelated engineering and material programs which support integrated planning for complex ship overhauls.

h. Manage engineering for the standardization of tests and the coordination of ship trials.

i. Based on ship modernization planning documents, assist Ship Logistic Divisions in the development of class modernization programs for assigned ships.

j. Establish and specify in the design of the alteration package non-deviation requirements with respect to standardization, control of configuration, and the level of quality requirements.

k. Assure that proper and timely planning information, design services, ILD planning procedures, quality assurance requirements, work scope guidance and such other services and materials, considered necessary for the modernization, repair, maintenance and overhaul of class/types of ships, are provided to overhauling shipyards and other cognizant activities in a timely manner.

l. Establish and promulgate PERA interface procedures for promoting effective integration of shipyards' and forces afloat's administrative, supply, planning and engineering functions with the overhaul and repair elements

of the PERA Program. Interface procedures considered common to other PERAs should be forwarded to NAVSHIPS for approval.

m. Implement Command policies for configuration management and Integrated Logistic Support (ILS) during the ship planning and overhaul phases in compliance with NAVMAT, NAVSUP and NAVSHIPS Instructions.

n. Demonstrate cost effectiveness of PERA efforts for all tasks performed.

o. Develop the management controls and procedures required to provide accurate, timely and comprehensive information concerning the status of PERA tasks. Report on status of tasks and progress at prescribed intervals to NAVSHIPS 04. Use existing management reporting systems and procedures where possible.

p. Administer funds, or the control thereof, to the extent directed by the customer, for tasks assigned, in accordance with NAVCOMPT, NAVSHIPS and Shipyard NIF procedures and in coordination with the Shipyard Comptroller. Be responsible to the customer for proper performance of the task and insure maximum economy and effectiveness.

q. Maintain a chronological history of PERA to provide information concerning significant events and decisions relating to PERA.

r. Develop, manage and coordinate assigned programs such as Advanced Equipment Repair Program (AERP) and the Ships Force Overhaul Management System (SFOMS) when tasked by NAVSHIPS.

s. Provide information, documentation, guidance and assistance to participating organizations for general and special support and test equipment, in order to plan, procure and effect timely deliveries of such equipment in support of PERA Programs.

t. Provide integrated logistic support requirements for new capabilities and installations, e.g., ship's force training, repair parts, instruction books, updated drawings, Planned Maintenance Sub-System (PMS), and Operational Sequencing System (OSS) as applicable.

u. Develop and keep current configuration data for each assigned ship class. Minimize duplication of existing data banks maintained at another activity, such as Naval Ship Missile Systems Engineering Station for SMS.

v. Develop, document, and implement a rigorous methodology to minimize duplicative overhaul planning and to assure integration of the industrial programs which support centralized overhaul planning.

w. Establish and implement methods which promote the standardization of documents and procedures, including format, numbering, etc., and data handling equipment for maximum efficiency in the interchange of information among all activities which plan and perform complex ship work.

x. Prepare and submit annual budget requirements in a standard format with standard line items approved by NAVSHIPS. Conduct with NAVSHIPS a mid-year budget review concurrently with review of the budget for the succeeding fiscal year. Provide to Naval Shipyards as required to meet annual budget submission schedules, anticipated requirements for design engineering work for basic alteration class drawings, SHIPALT scopes, etc., which are financed by NAVSHIPS directed Modernization Design Services (DSA) funds. Provide management and financial reports in accordance with requirements developed in cooperation with and as approved by NAVSHIPS. Participate in quarterly budget development at the Shipyard under NIF requirements.

y. In connection with assigned tasks and programs and after inquiry and appropriate response, task Naval activities and contract with private companies for the performance of engineering work and the procurement of material. Establish funding and schedule controls over such tasks and contracts, which require cost and progress reports, which when consolidated and evaluated, will provide timely cost and performance information and will identify trends.

z. Develop and update Technical/Maintenance Overhaul Repair Standards (TRS) as assigned by the appropriate Ship Logistic Managers.

aa. Study proposed alterations and evaluate them for technical necessity and feasibility, including weight and moment effect. Prepare, when tasked by NAVSHIPS, SHIPALTS for NAVSHIPS approval.

bb. Serve as Test Development Director for ASW Test Programs or other test programs when designated by NAVSHIPS 04.

6. Authority of PERA does not include:

a. Deviations from established Navy Department policy and procedures (including policies and procedures issued by SECNAV, CNO, CNM, NAVCOMPT, applicable System Commands, NAVSEC and other appropriate authority).

b. Final approval of program management plans and changes thereto.

c. Changes to schedules established by higher authority.

d. Changes degrading mission performance or altering operational or military characteristics specified by higher authority.

e. Final approval of waivers or deviations from specifications issued by NAVSHIPS or other higher authority unless such authority has been specifically delegated on a case basis.

f. Issuance of directives, instructions or procedures which affect other than the assigned ship types or which affect standardized procedures that are common to all ship types.

g. Additions of changes to the 3M (Maintenance and Material Management System), or to the FMP (Fleet Modernization Program Management System.)

h. Assignment of overhauls.

i. Procurement of material ordinarily purchased by the Naval Material Command or the Inventory Control Points (ICP) without approval of NAVSHIPS 04, and the receipt of funds specifically designated for that purpose.

j. Final approval of SHIPALTS.

MONTHS PRIOR TO OVERHAUL	MILESTONE	ACTION COMMAND
18	SHIP HISTORY FILE	PERA
	1. SHIP CHARACTERISTICS	
	2. PROPOSED MILITARY IMPROVEMENT (PMI)	
	3. AMALGAMATED MILITARY IMPROVEMENT PLAN (MIP)/ TECHNICAL IMPROVEMENT PLAN (TIP)/CLASS IMPROVEMENT PLAN (CIP)	
	4. FLEET MODERNIZATION PROGRAM (FMP) AND MATERIAL SUPPLEMENT	
	5. CURRENT SHIPS MAINTENANCE PROJECT (CSMP)	
	6. TYCOM SHIPALT PROGRAM	
	7. SHIP SYSTEM DEFINITION & INDEX (SSDI) WITH EQUIPMENT IDENTIFICATION CODE (EIC), WORK CENTERS, AND SYSTEM PRIORITIES IDENTIFIED	
	8. LIST OF OUTSTANDING ORDALTS	
	9. LIST OF ESSENTIAL SYSTEMS	
	10. LIST OF SCHEDULED OVHL ROUTINES	CONT.

APPENDIX C

OVERHAUL ADVANCE PLANNING MILESTONES [13]

MONTHS PRIOR TO OVERHAUL	MILESTONE	ACTION COMMAND
18 - CONT.	SHIP HISTORY FILE	PERA
	11. SHIP'S ELECTRONIC COMPONENT ACCOUNTING SYSTEM (SECAS) REPORT	
	12. INSURV REPORT	
	13. LIFE CYCLE MAINTENANCE MANAGEMENT PLAN	
17	REVIEW AND IDENTIFY DETECTION ACTION RESPONSE TECHNIQUE CORRECTIVE ACTIONS AND AERP THAT CAN BE IMPLEMENTED DURING OVHL	PERA
17	PREPARE PRELIMINARY ALT/REPAIR PACKAGE WORKBOOK:	PERA
	1. REVIEW FMP ALT & MATERIAL REQUIREMENTS FOR PROGRAMMED ALTS.	
	2. IDENTIFY LATE REPROGRAM REQUIREMENTS.	
	3. OBTAIN DRAWINGS ON OUTSTANDING ALTS.	
	4. REVIEW CSMP FOR ACTION AND TO SCOPE REPAIR PACKAGE.	
	5. REVIEW CSMP TO DETERMINE ACTIONS TO INDOCTRINATE SHIP IN PREPARING ADEQUATE DESCRIPTION OF WORK REQUEST.	

APPENDIX C - CONT.

MONTHS PRIOR TO OVERHAUL	MILESTONE	ACTION COMMAND
16	REVIEW FORECASTED ALTERATION PACKAGE FOR: 1. DESIGN GUIDANCE 2. FIRST TIME ALT DRAWING REQUIREMENTS 3. MATERIAL REQUIREMENTS 4. SHIPCHECK REQUIREMENTS 5. REVISION TO EXISTING DRAWINGS 6. PLANNING AND SCHEDULE EVENTS TO ENSURE ORDERLY ACCOMPLISHMENT OF ABOVE EVENTS 7. INITIATE FLEET IMPROVEMENT LOGISTIC SUPPORT (FILS)	PERA
15	FORWARD ALTERATION PACKAGE TO TYCOM FOR CONCURRENCE AND RECOMMEND NECESSARY ACTION TO CNO IF REQUIRED IN ACCORDANCE WITH FMP PROCEDURES.	PERA
13	AUTHORIZE PLANNING YARD TO START ACTION ON 1ST TIME ALTS BASED ON TYCOM DECISIONS AND RECOMMENDATIONS, AND NAVSHIPS CONCURRENCE. (REFER TO PROGRAMMED ALTS IN FMP.) (FORWARD FILS PROGRAM STATUS)	PERA

APPENDIX C - CONT.

MONTHS PRIOR TO OVERHAUL	MILESTONE	ACTION COMMAND
12	ISSUE OVERHAUL PLANNING LETTER TAILORED TO PARTICULAR ROH: 1. PLANNED ALTS 2. INSTRUCTIONS FOR CSMP UPDATE 3. SHIP SYSTEMS DEFINITION & INDEX (SSDI) 4. KEY MILESTONES	TYCOM
12	REVIEW AND UP-DATE CSMP FOR OVERHAUL REQUIREMENTS	SHIP
12	ISSUE MESSAGE TO PERA LISTING TENTATIVE NAVSHIPS FUNDED ALTS PLANNED, DESIGN GUIDANCE, AND ALTERATION MATERIAL AVAILABILITY.	NAVSHIPS
12	ISSUE MESSAGE LISTING TENTATIVE ORDALTS PLANNED, DESIGN GUIDANCE, AND ALTERATION MATERIAL AVAILABILITY.	NAVORD
11	REVIEW UP-DATED 3-M MATERIAL HISTORY AND CASREP REPORTS FOR REPAIR ACTIONS AS REQUIRED FOR OVERHAUL WORK PACKAGE.	PERA

APPENDIX C - CONT.

MONTHS PRIOR TO OVERHAUL	MILESTONE	ACTION COMMAND
11	ASSIGN SUPPLY OVERHAUL	TYCOM
12/11	FORWARD AUTOMATED WORK PACKAGE TO PERA	TYCOM
11/10	SHIPCHECK. SCOPE ALTS WORK PACKAGE. SCOPE SELECTED REPAIR WORK ELEMENTS FROM CSMP. PREPARE BEST ESTIMATE OF TOTAL REPAIR PACKAGE. THIS ACTION CONTINUES TO 8 MO PRIOR TO OVHL.	PERA DESIGNATED TECH ACTIVITIES
	A. AUTHORIZE OVHL ACTIVITY (WORKING DRAWINGS) AND PLANNING YARD TO SHIPCHECK TO REVIEW "WORK REQUIRED" TO ACCOMPLISH PROGRAMMED ALTS AND AERs. THIS ESTABLISHES TENTATIVE 180 DAY LETTER REQUIREMENTS.	
	B. ON SELECTED BASIS, TASK ACTIVITIES TO SHIPCHECK AND SCOPE REPAIR WORK PACKAGE.	PERA DESIGNATED ACTIVITIES (COORDINATE WITH TYCOM)
	C. ASSIST SHIP IN PREPARING 4790/2K (SHIP'S WORK REQUEST) TO ENSURE ADEQUATE DESCRIPTION OF WORK REQUIRED AND PROPER IDENTIFICATION OF SYSTEM INVOLVED. INFORMATION REQUIRED TO:	PERA

APPENDIX C - CONT.

MONTHS PRIOR TO OVERHAUL	MILESTONE	ACTION COMMAND
11/10 - CONT.	1. REDUCE TIME REQUIRED BY PLANNER TO ESTIMATE COST OF WORK REQUEST. 2. PERMIT ACCURATE COST ESTIMATE ON WORK REQUEST. 3. PROVIDE REPAIR AND TEST SEQUENCE NETWORKS TO DETERMINE STATUS OF WORK REQUEST DURING OVHL. 4. DETERMINE LONG LEAD TIME MATERIAL (LLTM) REQUIREMENTS.	
11/10	IDENTIFY INSURANCE ITEMS AND SHIPCHECK	PERA
11/10	SUBMIT LLTM	SHIP
10	PRODUCE AUTOMATED LLTM WORK ITEMS	TYCOM/ PERA
10/9	SHIPS FORCE WORK LIST	SHIP
9	REVIEW ON A CASE BASIS SELECTED ALTS DRAWING PACKAGES AS AGREED BY TYCOM/NAVSHIP.	PERA

APPENDIX C - CONT.

MONTHS PRIOR TO OVERHAUL	MILESTONE	ACTION COMMAND
9	PROGRESS STATUS OF SPECIAL PROGRAM MATERIAL. COMPLETION DATE IS END OF OVERHAUL.	PERA
9	FORWARD AUTOMATED WORK PACKAGE TO PERA	TYCOM
8	APPROXIMATE DATE SHIP DEPLOYS.	SHIP
8	FORWARD DRAFT 4720/3 TO NAVSHIPS 427 WHICH IDENTIFIES: 1. QUANTITY OF EQUIPMENT REQUIRED FOR EACH SHIPALT 2. QUANTITY OF EQUIPMENT PREVIOUSLY INSTALLED 3. QUANTITY OF EQUIPMENT TO BE PROVIDED TO COMPLETE SHIPALT.	PERA
8	DETERMINE KNOWN WORK PACKAGE AND IDENTIFY LONG LEAD TIME (LLT) ACTION REQUIRED FOR ACCOMPLISHMENT. ALSO REVIEW UNKNOWN WORK PACKAGE TO DETERMINE WHAT ACTIONS ARE REQUIRED TO COMPLETE TOTAL WORK PACKAGE.	PERA

APPENDIX C - CONT.

MONTHS PRIOR TO OVERHAUL	MILESTONE	ACTION COMMAND
7	SUBMIT INTEGRATED WORK PACKAGE WITH ASSIGNED ACTIONS.	PERA
7	REVIEW IDENTIFICATION OF "ESSENTIAL SYSTEMS"	PERA
7	SELECT PRE-OVHL TEST AND INSPECTION SPECIFICATIONS TAILORED AROUND KNOWN/UNKNOWN WORK PACKAGE.	PERA
7/6	REQUEST SPECIAL PRE-REGULAR OVERHAUL (ROH) TEST AND INSPECTIONS TAILORED AROUND DEPLOYMENT OPERATIONS BE SCHEDULED.	PERA
7/6	180-DAY LETTER	PERA
6	ISSUE 180-DAY LETTER ON NAVSHIPS FUNDED ALTS.	NAVSHIP
6	ISSUE LETTER ON ORDALTS.	NAVORD
6	SCHEDULE PRE-ROH TENDER AVAILABILITY	TYCOM

APPENDIX C - CONT.

MONTHS PRIOR TO OVERHAUL	MILESTONE	ACTION COMMAND
6	ASSEMBLE COMPLETE REPAIR WORK PACKAGE (SCOPE ALL REPAIR ACTIONS)	PERA/ SHIP
	1. STRUCTURE BY SSDI, EIC, BSCI.	
	2. IDENTIFY PRIORITY	
	3. ACTIONS; SHIP's FORCE, OVERHAUL ACTIVITY, TENDER OR DEFER	
	4. REVIEW FOR DUPLICATION OF WORK REQUESTS	
6/5	PREPARE WORK PACKAGE FOR REVIEW AT REVIEW CONFERENCE.	PERA
	1. ESTIMATE COST (TASK ACTIVITIES TO ACCOMPLISH)	
	2. PREPARE TRADE-OFF ANALYSIS	
	3. REVIEW FOR DUPLICATION OF WORK REQUESTS	
	4. SUMMARIZE OVERHAUL WORK REQUIRED FOR EACH EQUIPMENT. USE 2K's AND INSURANCE ITEMS TO SUPPORT WORK STATEMENTS	
5/4	SUBMIT PRELIMINARY WORK PACKAGE REPORT TO ALL CONCERNED FOR REVIEW. PERA TO STRUCTURE REPORT FOR TYCOM/SQUADRON/SHIP CONCURRENCE OR REVISION.	PERA

APPENDIX C - CONT.

MONTHS PRIOR TO OVERHAUL	MILESTONE	ACTION COMMAND
5/4	JOB CONTROL NUMBERS FOR PRIMARY WORK PACKAGE. (CUTOFF FOR AUTOMATED WORK PACKAGE)	SHIP
5/3	ADDITIONAL WORK	SHIP
4	PRELIMINARY EQUIPMENT COMPONENT INDEX (PECI)	INDUSTRIAL ACTIVITY (IND ACCTY)
4	OVERHAUL WORK PACKAGE REVIEW CONFERENCE.	TYCOM
4/3	TASK COGNIZANT ROH MANAGEMENT TO PREPARE SPECIFICATIONS FOR APPROVED WORK ITEMS	PERA
3/1	SCHEDULE AND MANAGE SPECIAL PRE-ROH TEST AND INSPECTION: 1. UNDERWAY REPLENISHMENT SYSTEM 2. BOILER INSPECTION 3. ELECTRONIC SYSTEM 4. ORDNANCE SYSTEM 5. OTHERS AS AUTHORIZED	TYCOM WITH PERA ASSIST

APPENDIX C - CONT.

MONTHS PRIOR TO OVERHAUL	MILESTONE	ACTION COMMAND
3/2	SHORT LEAD TIME ITEMS	SHIP
3/2	ENROUTE CONTINENTAL UNITED STATES (CONUS) 1. ASSIST SHIP'S FORCE IN SHIPS FORCE OVERHAUL MANAGEMENT SYSTEM (SFOMS) SET-UP 2. REVIEW STATUS OF CSMP UP-DATE AND PRIORITIES 3. CONDUCT SPECIAL PRE-ROH TEST AND INSPECTION	PERA LEAD ACTIVITY
2	SHIP ARRIVES CONUS 30 DAY STAND-DOWN	SHIP
2	HULL INSPECTION	SHIP AND REPAIR ACTIVITY
2	PREPARE SUPPLEMENTAL TO TOTAL REPAIR WORK PACKAGE BASED ON INPUT FROM SPECIAL PRE-ROH TEST. IDENTIFY LLTM.	PERA
2	TYCOM CONCURS/DEFERS ITEMS BASED ON REVIEW OF REPAIR PACKAGE SUPPLEMENT. INITIATE ADDITIONAL LLTM PROCUREMENT ACTION.	TYCOM

APPENDIX C - CONT.

MONTHS PRIOR TO OVERHAUL	MILESTONE	ACTION COMMAND
2	PERA COMPLETES TRADE-OFF ANALYSIS FOR TYCOM REVIEW. FINALIZE WORK PACKAGE STRUCTURED BY SSDI OR WORK BREAKDOWN STRUCTURE AND IDENTIFIED BY PRIORITY AND COST ESTIMATES.	PERA
2/1	SUBMIT TOTAL WORK PACKAGE SORTED BY: 1. SHIP'S FORCE WORK 2. OVERHAUL ACTIVITY WORK 3. TENDER WORK 4. REVIEW SUPSHIP SPECIFICATIONS TO ENSURE WORK IN ACCORDANCE WITH WORK REQUESTS. REPORT WORK NOT INCLUDED AND/OR NOT COVERED BY WORK REQUESTS.	PERA
2/1	CONTRACTORS INSPECTION FOR BIDDING	INDUSTRIAL ACCTY
2/1	A. FINAL WORK DEFINITION CONFERENCE B. TURNOVER OF ROH MANAGEMENT PLANNING	PERA TYCOM SHIP IND ACCTY

APPENDIX C - CONT.

MONTHS PRIOR TO OVERHAUL	MILESTONE	ACTION COMMAND
1	COMMENCE PRE-ROH TENDER AVAILABILITY	SHIP/ REPAIR SHIP
1/0	SHIP PREPARES FOR OVERHAUL: A. SHIP OFF-LOADS CARGO B. SHIPS ONBOARD ALLOWANCE PARTS (SOAP) TEAM VISITS C. COSAL TEAM VISITS D. SHIP ENTERS OVERHAULING ACTIVITY E. SHIP INPUTS DATA FOR SFOMS	SHIP
START OVHL	PROGRESS RESULTS OF ROH ADVANCED PLANNING FOR OVERHAUL AND ASSURE UP-DATE OF: 1. SELECTED RECORD DWGS 2. SELECT RECORD DATA 3. SHIP'S DRAWINGS 4. COSAL AND SUPPORTING REPAIR PARTS 5. ALTERATION RECORDS	PERA

APPENDIX C - CONT.

MONTHS PRIOR TO OVERHAUL	MILESTONE	ACTION COMMAND
START THRU COMPLETION (C)	ASSESS EFFECTIVENESS OF ADVANCE PLANNING BY REVIEWING CHANGES IN SCOPE OF WORK. CONDUCT POST-OVHL TEST AND INSPECTION. 1. PROVIDE FEEDBACK ON ADEQUACY OF PRE-OVHL TEST AND INSPECTION.	PERA
COMPLETE OVERHAUL	ANALYZE ADEQUACY OF REPAIR ACTION DESCRIPTION AND KEY CHECKS FOR SHIP'S FORCE.	PERA
C+1	ASSESS THE EFFECTIVENESS OF OVERHAUL PLAN AND PROCEDURES. REPORT RECOMMENDATIONS FOR FOLLOW ON ACTION. LIST WORK REQUESTS/ALTS/AERs THAT WERE DEFERRED OR NOT COMPLETED DURING OVHL. PREPARE PLAN TO ACCOMPLISH.	PERA
C+1/2	REPORT KNOWN LOGISTIC SUPPORT DEFICIENCIES	PERA
C+2	REPORT POST-OVHL CONFIGURATION AND SUBMIT PLAN OF ACTION ON FOLLOW-ON MAINTENANCE ACTIONS REQUIRED	PERA

APPENDIX C - CONT.

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Data Transfer Process
SHAPM
SLD
Project Management

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

The hypothesis upon which this research is based is that a current data transfer process exists but receives inadequate priority. Also, the data requirements are not all inclusive. Even though the Ships Logistic Division (SLD) Director has overall operational logistic support responsibility, Planning

and Engineering for Repairs and Alterations Office (PERA), as an extension of the SLD, is the primary Naval Ship System Command (NAVSHIPS) user of the data and documentation which is provided relative to life cycle maintenance. This thesis examines specifically the interface of the maintenance management responsibility transfer process and the concurrent data documentation transfer between the Ship's Acquisition Project Manager (SHAPM) and the SLD/PERA combination. To accomplish this end, the authors first introduce the reader to PERA operations, discuss the present transfer process, enumerate the results and conclusions derived from a questionnaire sent to SHAPM and SLD/PERA organizations, and present recommendations to improve the transfer process.

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Evaluation of the data transfer process between the SHAPM and SLD.

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Evaluation of the data transfer process

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